

#4



1

SEQUENCE LISTING

<110> Adler, David A.
 Holloway, James L.
 Baindur, Nand
 Beigel-Orme, Stephanie
 Sheppard, Paul O.

<120> NOVEL BETA-DEFENSINS

<130> 97-44D1

<140> US 10/091,166
 <141> 2002-03-05

<150> US 09/636,399
 <151> 2000-08-10

<150> US 09/344,097
 <151> 1999-06-25

<150> US 09/150,786
 <151> 1998-09-10

<150> US 60/064,294
 <151> 1997-11-05

<150> US 60/058,335
 <151> 1997-09-10

<160> 72

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 Met Arg Ile His Tyr Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val
 1 5 10 15

cct gtt cca ggt cat gga gga atc ata aac aca tta cag aaa tat tat 96
 Pro Val Pro Gly His Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
 20 25 30

tgc aga gtc aga ggc ggc cgg tgt gct gtg ctc agc tgc ctt cca aag 144
 Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 35 40 45

gag gaa cag atc ggc aag tgc tcg acg cgt ggc cga aaa tgc tgc cga 192
 Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
 50 55 60

aga aagaaataaa aaccctgaaa catg 219
 Arg
 65

<210> 2
 <211> 65

<212> PRT
<213> Homo sapiens

<400> 2
Met Arg Ile His Tyr Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val
1 5 10 15
Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
20 25 30
Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
35 40 45
Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
50 55 60
Arg
65

<210> 3
<211> 31
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<220>
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<221> VARIANT
<222> (9)...(12)
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<221> VARIANT
<222> (14)...(20)
<223> Any amino acid, preferably not cysteine.

<221> VARIANT
<222> (22)...(22)
<223> Any amino acid, preferably not cysteine.

<221> VARIANT
<222> (24)...(29)
<223> Any amino acid, preferably not cysteine.

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Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
1 5 10 15
Xaa Xaa Xaa Xaa Gly Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Cys
20 25 30

<210> 4
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<220>
<223> Degenerate nucleotide encoding the polypeptide of
SEQ ID NO:2.

<221> misc_feature
<222> (1)...(213)
<223> n = a, g, c or t

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athcaytayy tnytnntygc nytnytnyytng ytnttyytng tnccngtncc nggncaaygg 60
ggnathatha ayacnytnca raartrrrnnn tgymngngtnm gnggnggnmg ntgygcngtn 120
ytnwsntggy tnccnaarga rgarcarath ggnnaartgyw snacnmngng nmgnaartgy 180
tgymgnmgna araartrraa rccntrraay atg 213

<210> 5

<211> 20
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<220>
 <223> oligonucleotide ZC14741

<400> 5
 gagcacttgc cgatctgttc 20

<210> 6
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide ZC14740

<400> 6
 ccaggtcatg gaggaatcat 20

<210> 7
 <211> 18
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<220>
 <223> oligonucleotide ZC14780

<400> 7
 ggaggaatca taaacaca 18

<210> 8
 <211> 18
 <212> DNA
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<220>
 <223> Oligonucleotide ZC14776

<400> 8
 gccgatctgt tcctcctt 18

<210> 9
 <211> 438
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (220)...(420)

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 acaaatatccat agggagctct gccttaccat tgggttccta attaacttag tgagtgggtg 60
 tggatcgat ggtgagaggc attggaatga tgcatacaga aacatgtcat aatgtcatca 120
 ctgttatatg acaagaattt cagctgtggc tggAACCTT ataaaagtgc caagcacacc 180
 tttcatcca gtctcagcgt ggggtgaagc ctagcagct atg agg atc cat tat 234
 Met Arg Ile His Tyr
 1 5

ctt	ctg	ttt	gct	ttg	ctc	ttc	ctg	ttt	ttg	gtg	cct	gtt	cca	ggt	cat	282
Leu	Leu	Phe	Ala	Leu	Leu	Phe	Leu	Phe	Leu	Val	Pro	Val	Pro	Gly	His	
10				15						20						

gga gga atc ata aac aca tta cag aaa tat tat tgc aga gtc aga ggc 330
 Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Gly
 25 30 35

ggc cgg tgt gct gtg ctc agc tgc ctt cca aag gag gaa cag atc ggc 378

Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Gly
 4
 40 45 50

aag tgc tcg acg cgt ggc cga aaa tgc tgc cga aga aag aaa 420
 Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg Arg Lys Lys
 55 60 65

taaaaaccct gaaacatg 438

<210> 10
 <211> 67
 <212> PRT
 <213> Homo sapiens

<400> 10
 Met Arg Ile His Tyr Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val
 1 5 10 15
 Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
 20 25 30
 Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 35 40 45
 Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
 50 55 60
 Arg Lys Lys
 65

<210> 11
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<221> misc_feature
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 <223> n = a, g, c or t

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 cayggnggna thathaayac nytncaaraar trrrnnntgym gngtnmgngg nggnmgntgy 120
 gcngtnytnw sntgyytnc naargargar carathggna artgywsnac nmgnngnmgn 180
 aartgytgym gnmgnaaraa rtrraarccn trraayatg 219

<210> 12
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide ZC15591

<400> 12
 tgccgatctg ttcctccctt g 21

<210> 13
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide ZC15589

<400> 13
 gaacaggcac caaaaacagg aagag 25

<210> 14

<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 14
Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
1 5 10 15
Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
20 25 30
Lys Cys Cys Arg Arg
35

<210> 15
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (26)...(26)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 15
Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
1 5 10 15
Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
20 25

<210> 16
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (26)...(26)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 16
Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
1 5 10 15
Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
20 25 30

<210> 17
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (26)...(26)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 17
 Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
 1 5 10 15
 Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
 20 25

<210> 18
 <211> 38
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 18
 Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
 20 25 30
 Lys Cys Cys Arg Arg Lys
 35

<210> 19
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 19
 Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
 20 25 30
 Lys Cys Cys Arg Arg Lys Lys
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<210> 20
 <211> 44
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 20
 Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
 1 5 10 15
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
 20 25 30
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 21
 <211> 43
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 21
 Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
 1 5 10 15

Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
20 25 30
Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys
35 40

<210> 22
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 22
Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
1 5 10 15
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
20 25 30
Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg
35 40

<210> 23
<211> 43
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 23
Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys
1 5 10 15
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser
20 25 30
Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
35 40

<210> 24
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 24
Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys
1 5 10 15
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser
20 25 30
Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys
35 40

<210> 25
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 25
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1 5 10 15
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser

8
20 25
Thr Arg Tyr Arg Lys Cys Cys Arg Arg
35 40

<210> 26
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 26
Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala
1 5 10 15
Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr
20 25 30
Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
35 40

<210> 27
<211> 41
<212> PRT
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<220>
<223> Defensin polypeptide

<400> 27
Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala
1 5 10 15
Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr
20 25 30
Arg Tyr Arg Lys Cys Cys Arg Arg Lys
35 40

<210> 28
<211> 40
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20 25 30
Arg Tyr Arg Lys Cys Cys Arg Arg
35 40

<210> 29
<211> 41
<212> PRT
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<220>
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<400> 29
Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val
1 5 10 15
Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
20 25 30

Tyr Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 30
 <211> 40
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<400> 30
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 1 5 10 15
 Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
 20 25 30
 Tyr Arg Lys Cys Cys Arg Arg Lys
 35 40

<210> 31
 <211> 39
 <212> PRT
 <213> Artificial sequence

<220>
 <223> Defensin polypeptide

<400> 31
 Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val
 1 5 10 15
 Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
 20 25 30
 Tyr Arg Lys Cys Cys Arg Arg
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<210> 32
 <211> 40
 <212> PRT
 <213> Artificial sequence

<220>
 <223> Defensin polypeptide

<400> 32
 Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu
 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
 20 25 30
 Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 33
 <211> 39
 <212> PRT
 <213> Artificial sequence

<220>
 <223> Defensin polypeptide

<400> 33
 Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu
 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
 20 25 30
 Arg Lys Cys Cys Arg Arg Lys

<210> 34
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 34
Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu
1 5 10 15
Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
20 25 30
Arg Lys Cys Cys Arg Arg
35

<210> 35
<211> 49
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (45)...(45)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 35
Pro Gly His Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg
1 5 10 15
Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
20 25 30
Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
35 40 45
Lys

<210> 36
<211> 48
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (45)...(45)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 36
Pro Gly His Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg
1 5 10 15
Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
20 25 30
Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
35 40 45

<210> 37
<211> 48
<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (44)...(44)

<223> Leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 37

Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val
1 5 10 15
Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys
20 25 30
Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
35 40 45

<210> 38

<211> 47

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (44)...(44)

<223> Leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 38

Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val
1 5 10 15
Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys
20 25 30
Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
35 40 45

<210> 39

<211> 47

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (43)...(43)

<223> Leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 39

His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg
1 5 10 15
Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
20 25 30
Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
35 40 45

<210> 40

<211> 46

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (43)...(43)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 40

His	Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val	Arg
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Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile
														30	
Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys		
														45	
35						40									

<210> 41

<211> 46

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (42)...(42)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 41

Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val	Arg	Gly
1														15	
Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile	Gly
														30	
Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	Lys		
														45	
35						40									

<210> 42

<211> 45

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (42)...(42)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 42

Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val	Arg	Gly
1														15	
Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile	Gly
														30	
Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	Lys		
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35						40									

<210> 43

<211> 45

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (41)...(41)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 43
Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly
1 5 10 15
Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys
20 25 30
Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
35 40 45

<210> 44
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (41)...(41)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 44
Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly
1 5 10 15
Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys
20 25 30
Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
35 40

<210> 45
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (40)...(40)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 45
Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg
1 5 10 15
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met
20 25 30
Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
35 40

<210> 46
<211> 43
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (40)...(40)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 46
 Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg
 1 5 10 15
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met
 20 25 30
 Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 47
 <211> 43
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (39)...(39)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 47
 Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys
 1 5 10 15
 Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser
 20 25 30
 Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40

<210> 48
 <211> 42
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (39)...(39)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 48
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 1 5 10 15
 Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser
 20 25 30
 Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 49
 <211> 42
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 <213> Artificial Sequence

<220>
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<221> VARIANT
 <222> (38)...(38)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

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Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile	Gly	Lys	Met	Ser	Thr
			20				25						30		
Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	Lys						
			35				40								

<210> 50
<211> 41
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<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (38)...(38)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 50
 Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala
 1 5 10 15
 Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr
 20 25 30
 Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 51
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
<223> defensin polypeptide

<221> VARIANT
<222> (37)...(37)
<223> leucine, isoleucine, valine, phenylalanine, or methionine

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 Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg
 20 25 30
 Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40

<210> 52
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (37)...(37)
<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 52
Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val
1 5 10 15
Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg
20 25 30

Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 53
 <211> 40
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (36)...(36)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 53
 Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu
 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly
 20 25 30
 Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40

<210> 54
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<220>
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<221> VARIANT
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 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 54
 Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu
 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly
 20 25 30
 Arg Lys Cys Xaa Arg Arg Lys
 35

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<221> VARIANT
 <222> (35)...(35)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 55
 Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg
 20 25 30
 Lys Cys Xaa Arg Arg Lys Lys
 35

<210> 56
<211> 38
<212> PRT
<213> Artificial Sequence

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<223> Defensin polypeptide

<221> VARIANT
<222> (35)...(35)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 56
Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser
1 5 10 15
Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg
20 25 30
Lys Cys Xaa Arg Arg Lys
35

<210> 57
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<221> VARIANT
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<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 57
Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys
1 5 10 15
Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys
20 25 30
Cys Xaa Arg Arg Lys Lys
35

<210> 58
<211> 37
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<221> VARIANT
<222> (34)...(34)
<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 58
Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys
1 5 10 15
Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys
20 25 30
Cys Xaa Arg Arg Lys
35

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<221> VARIANT

<222> (33)...(33)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 59

Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu
1 5 10 15

Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys
20 25 30

Xaa Arg Arg Lys Lys
35

<210> 60

<211> 36

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<221> VARIANT

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<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 60

Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu
1 5 10 15

Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys
20 25 30

Xaa Arg Arg Lys
35

<210> 61

<211> 36

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<221> VARIANT

<222> (32)...(32)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 61

Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro
1 5 10 15

Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa
20 25 30

Arg Arg Lys Lys
35

<210> 62

<211> 35

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<221> VARIANT
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 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 62
 Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro
 1 5 10 15
 Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa
 20 25 30
 Arg Arg Lys
 35

<210> 63
 <211> 35
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<221> VARIANT
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 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 63
 Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 1 5 10 15
 Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
 20 25 30
 Arg Lys Lys
 35

<210> 64
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<221> VARIANT
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 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 64
 Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 1 5 10 15
 Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
 20 25 30
 Arg Lys

<210> 65
 <211> 34
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<220>
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<221> VARIANT

<222> (30)...(30)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 65

Arg	Val	Arg	Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu
1				5					10				15		
Glu	Cys	Ile	Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg
				20				25				30			

Lys Lys

<210> 66

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (30)...(30)

<223> Leucine, isoleucine, valine, phenylalanine, or methionine

<400> 66

Arg	Val	Arg	Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu
1				5					10				15		
Glu	Cys	Ile	Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg
				20				25				30			

Lys

<210> 67

<211> 33

<212> PRT

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<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (29)...(29)

<223> Leucine, isoleucine, valine, phenylalanine, or methionine

<400> 67

Val	Arg	Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu
1				5				10				15			
Cys	Ile	Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys
				20				25				30			

Lys

<210> 68

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (29)...(29)

<223> Leucine, isoleucine, valine, phenylalanine, or

methionine

<400> 68
 Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
 1 5 10 15
 Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 20 25 30

<210> 69
 <211> 32
 <212> PRT
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<220>
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<221> VARIANT
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 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 69
 Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys
 1 5 10 15
 Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 20 25 30

<210> 70
 <211> 31
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<220>
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<221> VARIANT
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 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 70
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 1 5 10 15
 Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 20 25 30

<210> 71
 <211> 31
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<220>
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<221> VARIANT
 <222> (27)...(27)
 <223> leucine, isoleucine, valine, phenylalanine, or
 methionine

<400> 71
 Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
 1 5 10 15
 Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 20 25 30

<210> 72

<211> 30

<212> PRT

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<223> Defensin polypeptide

<221> VARIANT

<222> (27)...(27)

<223> leucine, isoleucine, valine, phenylalanine, or
methionine

<400> 72

Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile

1

5

10

15

Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys

20

25

30